

REMARKS

Applicant respectfully request further examination and reconsideration in view of the following arguments. Claims 16-23 remain pending in the case. Claims 16-23 are rejected. Claims 1-15 were previously cancelled. Claims 24-35 were previously withdrawn.

35 U.S.C. §103(a)

Claims 16-23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,317,158 by Tice ("Tice") in view of U.S. Patent 6,009,190 by Szeliski et al. ("Szeliski"). Applicant has reviewed the cited references and respectfully submits that the embodiments of the present invention as recited in Claims 16-23 are patentable over Tice in view of Szeliski for the following rationale.

Applicant respectfully directs the Examiner to independent Claim 16 that recites:

A method of processing an image for display on a display having sub-pixel display capability, said method comprising:
mapping a plurality of sub-pixels of said display to corresponding spatial regions of said image, wherein each sub-pixel of said display is mapped to a unique spatial region of said image;
accessing said image, said image sampled at a higher spatial resolution than the spatial resolution of said display;
for each sub-pixel, calculating an intensity value for said sub-pixel using only intensity information for a first color from said corresponding spatial region; and
rendering said image on said display, based on said calculated intensities. (emphasis added)

Claims 17-23 that depend from independent Claim 16 also recited these features.

Tice and the claimed invention are very different. Applicant understands Tice to teach a method and apparatus for positioning an input image into interlaced video. Tice teaches that intensity of each output pixel is determined as a function of subpixel position and two other input pixels. In particular, Tice does not teach, describe or suggest “for each sub-pixel, calculating an intensity value for said sub-pixel using only intensity information for a first color from said corresponding spatial region”, (emphasis added) as claimed.

For instance, Applicant respectfully submits that Tice does not teach, describe or suggest “calculating an intensity value for said sub-pixel”. Applicant understands Tice to teach the determination of intensity for a pixel. In particular, Tice discloses that “[t]he intensity, color and brightness of each pixel (P_{out}) in the output line is determined as a function of the subpixel position (SubPixelPosition) and two pixels (P_{in0} and P_{in1}) in the selected lines in the input image” (emphasis added; col. 3, lines 44-47). Furthermore, Equations 1a (col. 3, line 49) and 1b (col. 3, line 54) explicitly illustrate that each pixel is determined without independently determining the intensity of each sub-pixel of the pixel. In contrast, by teaching that the intensity of each pixel, and thus all sub-pixels of

the pixel, is determined collectively, Applicant respectfully submits that Tice teaches away from “calculating an intensity value for said sub-pixel” as claimed.

Furthermore, Applicant respectfully submits that Tice does not teach, describe or suggest “calculating an intensity value for said sub-pixel using only intensity information for a first color from said corresponding spatial region”, (emphasis added) as claimed. In contrast, as recited above, Tice teaches determining intensity, color and brightness of a pixel based on subpixel position and two input pixels (col. 3, lines 44-47). Therefore, Tice does not teach “using only intensity information for a first color from said corresponding spatial region”, as claimed. Rather, by teaching that intensity of a pixel is determined based on sub-pixel position and two input pixels, Applicant respectfully submits that Tice teaches away from “calculating an intensity value for said sub-pixel using only intensity information for a first color from said corresponding spatial region”, (emphasis added) as claimed.

Considering Szeliski, the combination of Tice and Szeliski fails to teach or suggest this claim limitation because Szeliski does not overcome the shortcomings of Tice. Szeliski, alone or in combination with Tice, does not show or suggest “for each sub-pixel, calculating an intensity value for said sub-pixel using only intensity information for a first color from said corresponding spatial region” as claimed. In particular, the Examiner has acknowledged that Szeliski

does not provide such a teaching by indicating that the Remarks Accompanying Pre-Appeal Brief Request for Review filed by the Applicant on March 13, 2006, were persuasive (see Office Action mailed May 23, 2006, page 5, Response to Arguments).

Furthermore, Applicant respectfully submit that the combination of Tice in view of Szeliski fails to teach these limitations because Szeliski fails to remedy the shortcomings of Tice. In particular, the combination of Tice and Szeliski fails to teach or suggest the present invention as claimed because the combination of Tice and Szeliski does not satisfy the requirements of a *prima facie* case of obviousness.

In order to establish a *prima facie* case of obviousness, the prior art must suggest the desirability of the claimed invention (MPEP 2142). In particular, "if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious" (emphasis added) (MPEP 2143.01; *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)). Moreover, "[i]f the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed amendment" (emphasis added) (MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)).

First, Applicant respectfully submits that there is no combination to combine the teachings of Tice and Szeliski, because Szeliski teaches away from the claimed embodiments. As stated in the Remarks Accompanying Pre-Appeal Brief Request for Review filed by the Applicant on March 13, 2006, Applicant respectfully asserts that Szeliski does not teach, describe or suggest "calculating an intensity value for said sub-pixel" as claimed. In particular, Szeliski specifically teaches that a composited pixel intensity value is placed into a triangle. Moreover, the only teaching within Szeliski related to a sub-pixel is in reference to a local search of a local error surface.

Applicant respectfully asserts that there is no motivation or suggestion to combine these teachings. By teaching that a composited pixel intensity value is placed into a triangle, Applicant respectfully asserts that Szeliski teaches away from "for each sub-pixel, calculating an intensity value for said sub-pixel using only intensity information for a first color from said corresponding spatial region," as claimed. Applicant respectfully notes that the Szeliski reference must be considered in its entirety in determining whether there is motivation or suggestion to combine Szeliski with Tice. Accordingly, the aforementioned limitations are not taught or suggested by Szeliski and thus an essential element needed for a prima facie rejection based on the cited references is not present.

Second, Applicant understands Tice to a method and apparatus for positioning an input image into interlaced video. In particular, Tice specifically recites that “[t]he filtered input image then is positioned in the output image by mapping one line in the output image to one line in the filtered input image space” (emphasis added; col. 1, lines 58-60). Applicant respectfully submits that Tice teaches a one to one mapping of an input image to an output image. In particular, Tice teaches that the input image and the output image have the same spatial resolution.

Specifically, Applicant respectfully submit that the intended purpose and principle of operation of Tice is to provide a method and apparatus for positioning an input image to an output image of interlaced video using the same spatial resolution. Applicant understands Szeliski to teach operating on smaller image data structures to refine data (col. 13, lines 16-32). Examiner suggests that the method and apparatus of Tice be modified to include operating on smaller image data structures. However, as described above, Tice teaches a method and apparatus for positioning an input image to an output image of interlaced video using the same spatial resolution. With regard to modifying the system to for operation on smaller image data structures, such a modification would render Tice inoperable for its intended purpose.

Since Tice teaches that a method and apparatus for positioning an input image to an output image of interlaced video using the same spatial resolution,

there is no motivation by Tice to modify the method and apparatus to be modified to operate on smaller image data structures having different spatial resolutions. In contrast, by teaching that the use of the same spatial resolution in positioning an input image to an output image, Applicant respectfully assert that Tice teaches away from the suggested combination with Szeliski.

Applicant respectfully asserts that the combination of Tice in view of Szeliski teach, disclose or suggest the present invention as recited in independent Claim 16, and that this claim overcome the rejection under 35 U.S.C. § 103(a) and is thus in condition for allowance. Furthermore, Applicant respectfully submits that Tice also does not teach or suggest the additional claimed features of the present invention as recited in Claims 17-23 that depend from independent Claim 16. Therefore, Applicant respectfully submits that Claims 17-23 also overcome the rejection under 35 U.S.C. § 103(a), and are in condition for allowance as being dependent on an allowable base claim.

CONCLUSION


In light of the above remarks, Applicant respectfully requests reconsideration of the rejected claims. Based on the arguments presented above, Applicant respectfully asserts that Claims 16-23 overcome the rejections of record and, therefore, Applicant respectfully solicits allowance of these Claims.

The Examiner is invited to contact Applicant's undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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